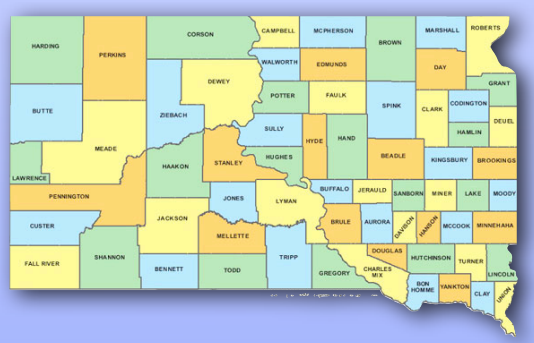
Guiding the Development and Evaluation of Accessible Test Items Using the

TAMI

Test Accessibility and Modification Inventory

Accessibility Rating Matrix



Presenters:

Peter A. Beddow & Ryan J. Kettler

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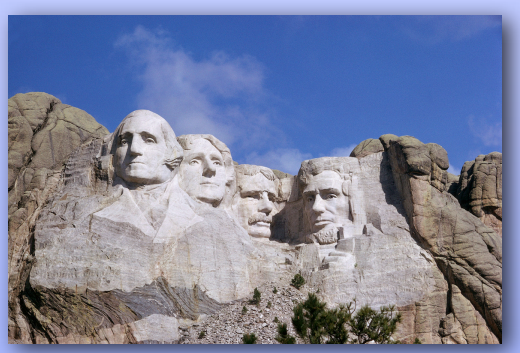

May, 2010

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Session Objectives

- The primary purposes of this session are to convey the critical importance of test accessibility and to teach a systematic method of evaluating and modifying test items to enhance their accessibility.
- Specifically, session participants will:
  - Learn a data-driven, theory-based method for evaluating and modifying test items to ensure they are accessible to as many students as possible while yielding valuable information about student knowledge and skills.
  - Apply the method to actual test items and observe the changes in accessibility following modification.

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Accessibility

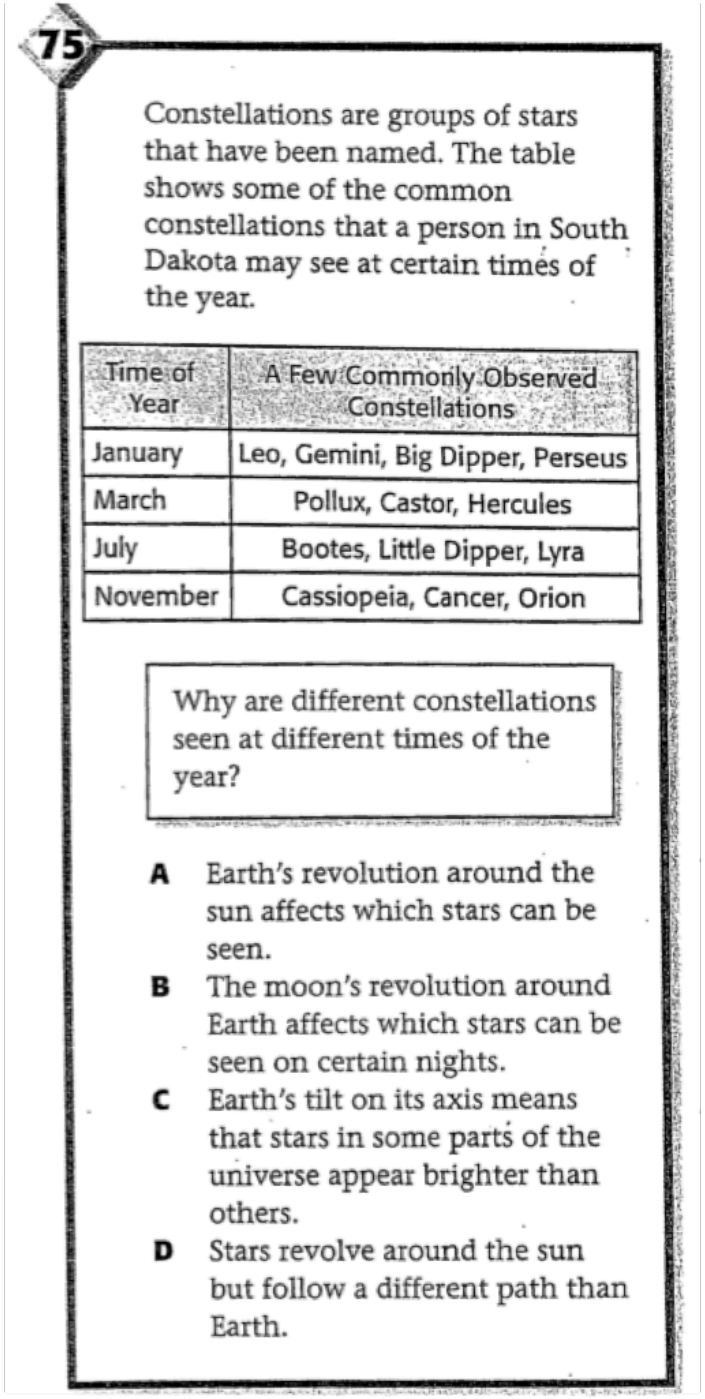
- **Accessibility** is the extent to which a product, environment, or system eliminates barriers and permits equal access to all components and services for all individuals. (Beddow, Kettler, & Elliott, 2008)

- **Test accessibility** is the extent to which a test and its constituent item set permits the test-taker to demonstrate knowledge of the target construct. Thus, an accessible test:

  1. Eliminates barriers;

  2. Permits equal access to all components and features for the totality of the target population of the test; and

  3. Yields scores from which subsequent inferences do not reflect error that is the result of incomplete test-taker access.



75

Constellations are groups of stars that have been named. The table shows some of the common constellations that a person in South Dakota may see at certain times of the year.

Time of Year	A Few Commonly Observed Constellations
January	Leo, Gemini, Big Dipper, Perseus
March	Pollux, Castor, Hercules
July	Bootes, Little Dipper, Lyra
November	Cassiopeia, Cancer, Orion

Why are different constellations seen at different times of the year?

A Earth's revolution around the sun affects which stars can be seen.

B The moon's revolution around Earth affects which stars can be seen on certain nights.

C Earth's tilt on its axis means that stars in some parts of the universe appear brighter than others.

D Stars revolve around the sun but follow a different path than Earth.

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How accessible is this item?

Grade: 8

Domain: Science

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Accessibility is an Interaction

- Additionally, accessibility involves an **interaction** between characteristics of the test and individual test-taker characteristics.
  - A test event may permit one individual to access the target construct with minimal effort, whereas for another individual, the same test event may require the expenditure of essential cognitive resources to gain access the target construct.
  - Both individuals may be equally knowledgeable of the tested content, but accessibility issues may preclude one from demonstrating what he or she knows.

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What we have learned so far...

- ...about students who likely are eligible for participating in a modified alternate assessment (i.e., students in Special Education who typically score below proficient on general assessments at the state level):
  - Based on group analyses, they read more slowly than do non-eligible students (Roach et al., 2010, AZ CMAADI).
  - They score lower than non-eligible comparison groups in reading & math (Elliott et al., 2010).
  - They expend more mental effort on equivalent test items in reading and math than their non-eligible peers (AZ CMAADI).
  - They receive less coverage of grade-level content in reading and math than their non-eligible peers (AZ CMAADI).

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What we have learned so far...

- ...about alternate assessments based on modified achievement standards (AA-MAS).
  - Modifications can make items easier for all groups (Elliott et al., 2010).
  - The boost can be differential, reducing the gap (Kettler et al., In press).
  - Tests with modified items can be reliable (Kettler et al., In press).
  - Shortening the stem and removing visuals from reading tests may help (Kettler et al., In press).

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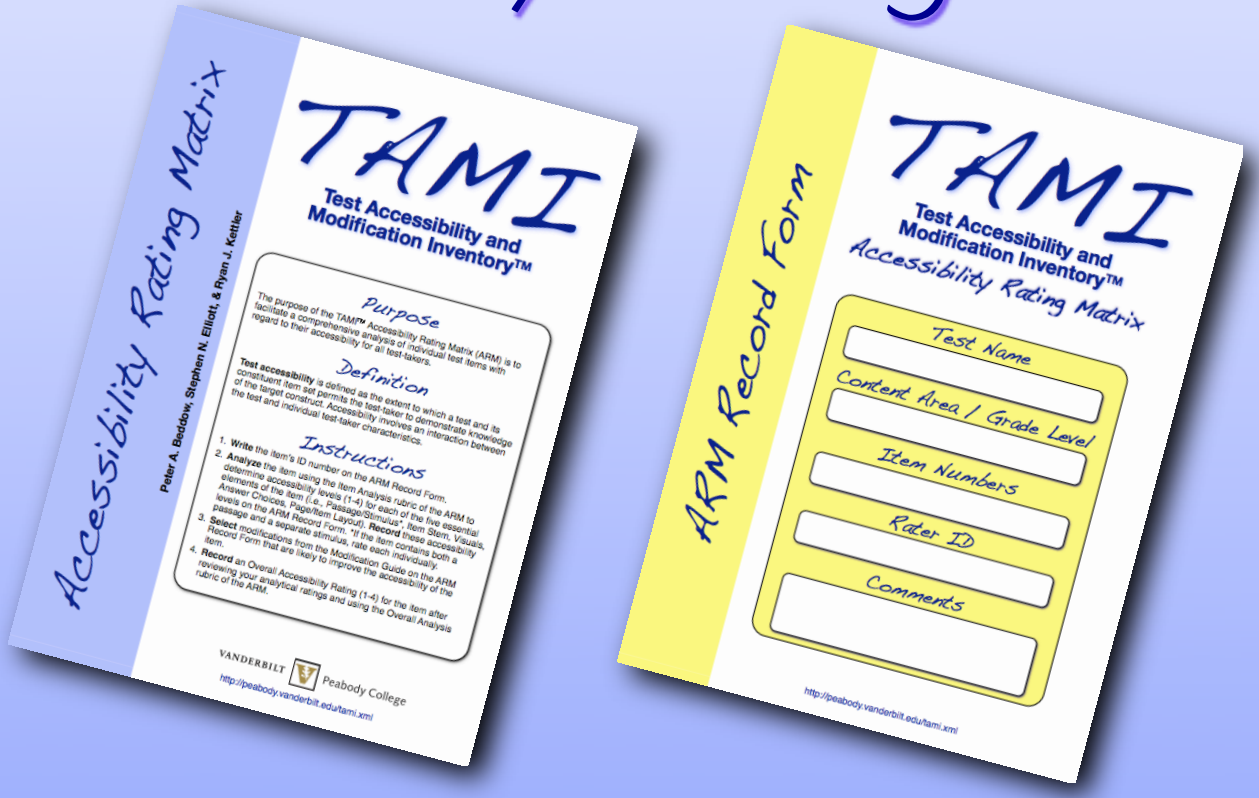
TAMI

Test Accessibility and Modification Inventory™

Accessibility Rating Matrix



TAMI: Overview

- The Test Accessibility and Modification Inventory (TAMI; Beddow, Kettler, & Elliott, 2008) and Accessibility Rating Matrix (Beddow, Elliott, & Kettler, 2009) were developed as evaluation and decision-making tools to facilitate the analysis of new and existing tests and test items with the purpose of enhancing their accessibility.
- The TAMI was influenced by four primary areas of study:

  1) Universal design principles;
  2) Cognitive load theory;
  3) Research on test and item development; and
  4) Guidance on web and computer accessibility.

Universal Design Principles

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1. Equitable use
2. Flexibility in use
3. Simple and intuitive use
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

Cognitive Load Theory

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"Considering the wide variety of different variables that have been studied...there seems to be some limitation built into us either by learning or by the design of our nervous systems, a limit... [on] our channel capacities..." (Miller, 1956, p.86)

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Cognitive Load Theory

Intrinsic Load

Amount of mental processing requisite for completing a task.

+

Germane Load

Cognitive demand that is not necessary for gaining essential knowledge but enhances learning through automation or generalization.

+

Extraneous Load

Demand for cognitive resources to attend to and integrate nonessential elements that are preliminary to actual learning.

"Intrinsic, extraneous, and germane cognitive loads are additive in that, together, the total load cannot exceed the working memory resources available if learning is to occur"(Paas, Renkl, and Sweller, 2003, p.2)**.**

Test & Item Writing Guidelines

Downing, Haladyna, and Rodriguez (2002) synthesized test & item-writing research into 31 guidelines for writing multiple-choice items.

Content concerns

1. Every item should reflect specific content and a single specific mental behavior, as called for in test specifications (two-way grid, test blueprint).
2. Base each item on important content to learn; avoid trivial content.
3. Use novel material to test higher level learning. Paraphrase textbook language or language used during instruction when used in a test item to avoid testing for simply recall.
4. Keep the content of each item independent from content of other items on the test.
5. Avoid over specific and over general content when writing MC items.
6. Avoid opinion-based items.
7. Avoid trick items.
8. Keep vocabulary simple for the group of students being tested.

Formatting concerns

9. Use the question, completion, and best answer versions of the conventional MC, the alternate choice, true-false (TF), multiple true-false (MTF), matching, and the context-dependent item and item set formats, but AVOID the complex MC (Type K) format.
10. Format the item vertically instead of horizontally.

Style concerns

11. Edit and proof items.
12. Use correct grammar, punctuation, capitalization, and spelling.
13. Minimize the amount of reading in each item.

Writing the stem

14. Ensure that the directions in the stem are very clear.
15. Include the central idea in the stem instead of the choices.
16. Avoid window dressing (excessive verbiage).
17. Word the stem positively, avoid negatives such as NOT or EXCEPT. If negative words are used, use the word cautiously and always ensure that the word appears capitalized and boldface.

Writing the choices

18. Develop as many effective choices as you can, but research suggests three is adequate.
19. Make sure that only one of these choices is the right answer.
20. Vary the location of the right answer according to the number of choices.
21. Place choices in logical or numerical order.
22. Keep choices independent; choices should not be overlapping.
23. Keep choices homogeneous in content and grammatical structure.
24. Keep the length of choices about equal.
25. *None-of-the-above* should be used carefully.
26. Avoid *All-of-the-above*.
27. Phrase choices positively; avoid negatives such as NOT.
28. Avoid giving clues to the right answer, such as
    a. Specific determiners including always, never, completely, and absolutely.
    b. Clang associations, choices identical to or resembling words in the stem.
    c. Grammatical inconsistencies that cue the test-taker to the correct choice.
    d. Conspicuous correct choice.
    e. Pairs or triplets of options that clue the test-taker to the correct choice.
    f. Blatantly absurd, ridiculous options.
29. Make all distractors plausible.
30. Use typical errors of students to write your distractors.
31. Use humor if it is compatible with the teacher and the learning environment.

Anatomy of an Item

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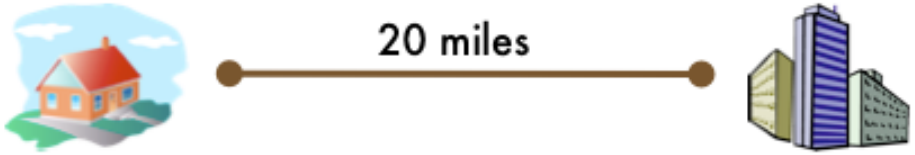
Stimulus →

Visual →

Stem →

Answer Choices key (**B**) and distractors (**A** & **C**) →

Mr. Murphy uses his car to get to work three days each week.



How many miles does Mr. Murphy drive to and from his job each week?

~~A.~~ 60 miles

B. 120 miles

~~C.~~ 200 miles

Page Layout

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TAMI ARM: Structure

- The **TAMI Accessibility Rating Matrix (ARM)** contains two rubrics.
  - **<u>Item Analysis</u> (i.e., item element) rubric:**
    - Passage / Item Stimulus
    - Item Stem
    - Visuals
    - Answer Choices
    - Page / Item Layout
  - **<u>Overall Analysis</u> (i.e., overall item-level) rubric**
    - It should be noted that Overall ratings are not simply mathematical derivatives of the item element ratings.

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Goals of Item Modification

1) Reduce barriers to access;
2) Reduce extraneous cognitive load;
3) Maintain the same depth of knowledge;
4) Improve efficiency; and
5) Increase the validity of inferences from test results.

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ARM Item Analysis

Accessibility Rating Matrix

	Level 1 Inaccessible for Many Test-Takers	Level 2 Maximally Accessible for Some Test-Takers	Level 3 Maximally Accessible for Most Test-Takers	Level 4 Maximally Accessible for Nearly All Test-Takers
Passage / Item Stimulus	• Contains many words that are not essential for responding to the item(s). • The majority of text is likely to be difficult to understand for some test-takers. • Vocabulary and sentence structure are not grade-appropriate. • Directions / pre-reading text highly complex, very confusing.	• Contains some words that are not essential for responding to the item(s). • A large portion of text is likely to be difficult to understand for test-takers. • Vocabulary and sentence structure are mostly grade-appropriate. • Directions / pre-reading text overly complex, confusing.	• Contains a few words that are not essential for responding to the item(s). • Some text is likely to be difficult to understand for test-takers. • Vocabulary and sentence structure are mostly grade-appropriate. • Directions or pre-reading text not as clear as possible.	• Contains only words that are essential for responding to the item(s). • Text is minimal in length and written as plainly as possible. • Vocabulary and sentence structure are grade-appropriate. • Directions / pre-reading text clear, minimal in length.
Item Stem	• The entirety of the stem is overly complex. • Does not reflect intended content standard(s) and/ or objective(s). • Stem directive or question is very confusing. • Uses **not** or **except.** • Written in the passive voice.	• Much of the stem language is overly complex. • Reflects intended content standard(s) and/or objective(s). • Stem directive or question is somewhat confusing. • Uses **not** or **except.** • Written in the active voice.	• Contains some text that could be simplified. • Reflects intended content standard(s) and/or objectives. • Target construct is evident. • Positively worded, written in the active voice.	• Text is minimal in length, written as plainly as possible. • Reflects intended content standard(s) and/or objective(s). • Target construct is evident. • Positively worded, uses active voice.
Visuals (applies only to items with pictures, charts, tables, or figures)	• Included visuals are irrelevant, unnecessary, and may cue the test-taker to an incorrect response, **or** • Included visual(s) are necessary but poorly depict the intended image(s. • Visuals contain a large amount of unnecessary complexity and text. • Visual(s) likely will cause confusion for test-takers, possibly cueing to an incorrect response.	• Included visuals are irrelevant and unnecessary, possibly distracting some test-takers from attending to essential item content, **or** • Included visual(s) are necessary but do not clearly depict the intended image(s) or • Visual(s) contain some extraneous complexity or text that may be distracting for some test-takers.	• Visual(s) are necessary for responding to the item. • Visual(s) clearly depict the intended image(s), but not as plainly as possible. • Visual(s) contain some nonessential words. • Visual(s) may distract a few test-takers.	• Included visual(s) are necessary for responding to the item. • Visual(s) clearly depict the intended image(s) and are as simple as possible. • Visual(s) contain only text that is necessary for responding. • Visual(s) are unlikely to distract test-takers.
Answer Choices (applies only to multiple-choice items)	• Contains many nonessential words. • Answer choices are overly complex. • Key and distractors are unbalanced with regard to order, length, or content in a manner that is likely to cue test-takers to an incorrect response. • One or more distractors is implausible. • More than one answer choice may be correct.	• Contains some nonessential words. • Answer choices could be simplified. • Rationale could be made for multiple correct responses. • Key and distractors are unbalanced with regard to order, length, or content in a manner that may cue a response. • One or more distractors is implausible.	• Contains one or more nonessential words. • Answer choices are written plainly. • Key and distractors are unbalanced with regard to length, order, or content. • All distractors are plausible. • Only **one** answer is correct.	• Answer choices are minimal in length, written as plainly as possible. • Key and distractors are balanced with regard to length, order, and content. • All distractors are plausible. • Only **one** answer is correct.
Page / Item Layout	• A large amount of information is spread across multiple pages/screens. • Page and/or item layout appears very cluttered and confusing; font sizes are too small. • Nonessential page elements are distracting, draw attention from item elements that are necessary for responding. • Visuals are not integrated with the item stimulus and stem.	• Item requires the test-taker to turn the page 2 or more times to respond to the item. • Page and/or item layout appears cluttered. • Font sizes and/or item elements not sized properly to facilitate responding. • White space is insufficient for facilitating comprehension of necessary item elements. • Visuals are not integrated with the item stimulus and stem.	• Item requires the test-taker to turn the page to respond to the item. • Page/item layout appears mostly clean and uncluttered, but not as well-organized as possible. • White space is mostly sufficient for facilitating access to necessary item elements. • Text and item elements are large and readable. • Visuals are not integrated with the stimulus and stem.	• Entire item and all necessary information for responding is presented on one page/screen, with visuals integrated with the item stem. • Page/item layout is well-organized and presented in a manner that facilitates responding, • White space is sufficient to facilitate comprehension of necessary item elements. • Text and item elements are large and readable.

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4
Maximally Accessible for Nearly All Test-Takers

- Item contains only content (words, visuals) that is essential for responding to the item.
- All item text is minimal in length and written as plainly as possible.
- Item stem is positively worded, written in the active voice, and the target construct is evident.
- Any included visuals are necessary and clearly depict the intended image(s).
- All answer choices are necessary, plausible, and balanced with regard to length, content, and order.
- Entire item and all information essential for responding is presented together on one page/screen in a manner that facilitates responding.

3
Maximally Accessible for Most Test-Takers

- Item contains some content that is not essential for responding to the item.
- Stem is positively worded, written in the active voice, and the target construct is evident.
- Included visuals are not as simple or clear as possible.
- Visuals are not integrated with the other item elements.
- One or more distractors is unnecessary and/or answer choices are unnecessarily complex or unbalanced with regard to length, content, and order. Only **one** option is correct.
- Item layout is somewhat cluttered, or test-taker must turn the page to respond to the item.

2
Maximally Accessible for Some Test-Takers

- Item contains content that is not essential for responding to the item, to the extent that it may be distracting or confusing to the test-taker.
- The wording of the item stem may cause some confusion as to what is required.
- Included visuals are unnecessary **and** potential distract the test-takers from essential item elements, **or** visuals are do not clearly depict the intended images or are unnecessarily complex.
- One or more distractors is implausible or absurd.
- Answer choices are unnecessarily complex or unbalanced with regard to length, content, and order.
- Rationale could be made for more than one correct response.
- Nonessential item elements in the page layout may draw test-taker attention away from essential content, or the test-taker must turn the page 2 or more times to respond to the item.

1
Inaccessible for Many Test-Takers

- The item contains a large amount of content that is not essential for responding to the item, to the extent that it is likely to confuse the test-taker.
- Stem is negatively worded, in passive voice, and/or it is not evident what is required.
- Included visuals are irrelevant and may cue test-taker to an incorrect response, **or** included visuals are likely to confuse the test-taker due to complexity or lack of clarity.
- Answer choices are unbalanced in a manner that may cue an incorrect response, contain more than one correct answer, and/or are implausible/absurd.
- Nonessential item elements in the page layout are likely to draw attention from essential information, or a large amount of essential information is presented across multiple pages/screens.

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ARM Record Form

Accessibility Rating Matrix

Passage / Item Stimulus

A = Add a passage or item stimulus.
E = Eliminate passage or item stimulus.
S = Simplify / shorten text.
R = Reorganize information.
D = Modify the directions.
B = Add **bold** font for essential words.
Note: Write **X** in the Rating Box if the item has no passage or stimulus.

Item Stem

S = Simplify / shorten stem.
C = Clarify question or directive.
Q = Change stem to a question.
A = Use active voice.
N = Eliminate negative stem.
B = Add **bold** font for essential words.
Note: Write **X** in the Rating Box if the item does not have a stem.

Visuals

A = Add a visual.
E = Eliminate visual(s).
M = Move visual(s).
S = Simplify visual(s).
Note: Write **X** in the Rating Box if the item does not have a picture, chart, table, or figure.

Answer Choices

S = Simplify / shorten text.
R = Revise answer choices.
E = Eliminate distractor(s).
O = Change the order of choices.
B = Balance issues.
M = More than one correct response.
Note: Write **X** in the Rating Box if the item is not a multiple-choice item.

Page/ Item Layout

E = Embed item in passage.
W = Increase white space.
S = Change size of item elements.
F = Change font size.
M = Move item / change item order.
R = Reduce spread of information across multiple pages/screens.

Overall

Other codes:

Modification Guide

Item:	Pass.	Stim.	A:	E:	S:	R:	D:	B:

Beddow, Elliott, & Kettler (2009)

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Item Analysis

Spread out the TAMI ARM. Place a copy of the ARM Record Form to the right. For each item:

1) **Write** the Item's ID# on the ARM Record Form.

2) **Analyze** the item using the Item Analysis rubric and determine the accessibility levels (1-4) of each of the five essential elements (i.e., the anatomic parts) of the item.

3) **Select** modifications from the Modification Guide on the ARM Record Form that are likely to improve the item's accessibility.

4) **Record** these numbers in the white boxes beside each item element on the Record Form.

Overall Analysis

1) **Review** your Item Analysis ratings for the individual item elements (i.e., Passage/Stimulus, Stem, Visuals, etc.)

2) **Record** an Overall Accessibility rating (1-4) for the item using the Overall Analysis rubric.

   a) Again, the Overall Accessibility score is **not** simply a mathematical derivative (e.g., an average) of the Item Analysis ratings.

ARM Accessibility Levels

Level	Description	Heuristic
4	Maximally Accessible for Nearly All Test-Takers	Optimal accessibility for between 95-99% of the population
3	Maximally Accessible for Most Test-Takers	Optimal accessibility for between 90-95% of the population
2	Maximally Accessible for Some Test-Takers	Optimal accessibility for between 85-90% of the population
1	Inaccessible for Many Test-Takers	Optimal accessibility for fewer than 85% of the population

Rating Guidance

Note: The following slides are not intended to replace the TAMI Accessibility Rating Matrix rubrics. Rather, they are intended to provide supplementary clarification.

*Identifying item elements that may be in need of improvement is an essential first step in the item modification process.

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Rating Guidance

As a rule of thumb, accessibility levels should reflect the approximate portion of the test-taker population for whom the item is likely to be **maximally accessible** (i.e., who freely are able to show the extent of their knowledge of the target construct).

1) **Level 1 -** The item is maximally accessible for fewer than 85% of test-takers.

2) **Level 2 -** The item is maximally accessible for between 85-90% of test-takers.

3) **Level 3 -** The item is maximally accessible for between 90-95% of test-takers.

4) **Level 4 -** The item is maximally accessible for between 95-100% of test-takers.

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General Considerations

1) **Before perusing the item data, complete the item independently.**

   a) Engage in the process of responding to the item as though you were the test-taker.

2) **Is there more than one correct response?**

   a) Is there a strong rationale / logical argument that could be made that one or more of the distractors is **correct**?

   b) Items for which there is more than one correct response receive **Answer Choices** and **Overall** accessibility ratings **no higher than 1**.

      i) Similarly, if one or more distractors may be so plausible as to likely cause unnecessary confusion for the test-taker (and not simply represent common errors), rate the item **no higher than 2.**

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General Considerations

3) Does the item require the test-taker to turn the page?

- Items that require the test-taker to flip back and forth receive **Page/Item Layout** and **Overall** accessibility ratings **no higher than 3**. Examples:
  - Items that are on a separate page from the corresponding passage, stimulus, or visual;
  - Passages that are comprised of more than 2 **facing** pages, including corresponding items.
  - Items that require the test-taker to reference a separate formula page.

4) Start at the highest level of the rubric and work down.

- If the 4 level is true for the item, rate 4 for that category. If the rubric contains a statement that is false for the item, work backward until you find the closest approximation to the rubric level that is true for the item.

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Item Accessibility Review

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Item Accessibility Review

- The TAMI Evaluation Team at Vanderbilt evaluated the accessibility of a sample of 101 science items from South Dakota in grades 5, 8, and 11.
- To ensure optimal reliability, 25% of items were rated by 2 raters. If agreement was not reached on any item, the team conferred to establish a consensus rating.

Item Information

Recommended Item Information	Reviewed Items
1. Content Area	✔
2. Grade Level	✔
3. Target Construct / Strand / Skill	
4. Depth of Knowledge (DOK) Level[1]	✔
5. Key (correct response)	
6. Difficulty for Overall Sample (*p*) and Disaggregated by Test Score Range Disaggregated by Disability Status	✔
8. Point-biserial statistics (*Ptbs*)	✔
9. Response Frequencies Disaggregated by Test Score Range Disaggregated by Disability Status	
10. Rationale for Each Distractor	
11. Readability Level	
12. Item in Actual Form	✔

Example Item

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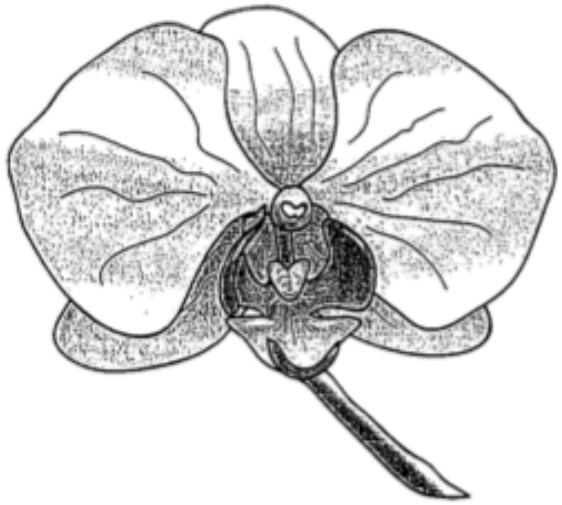
34.



Based on the picture above, how should this organism be classified?

A Angiosperm
B Gymnosperm
C Bryophyte
D Fern

TAMI™ Accessibility Rating Matrix

Modification Guide — Item: G11 #34

	Pass	Stm
Passage / Item Stimulus	X	X
Item Stem	4	
Visuals	4	
Answer Choices	3	
Page/ Item Layout	4	
Overall	4	

Passage / Item Stimulus
A = Add a passage or item stimulus.
E = Eliminate passage or item stimulus.
S = Simplify / shorten text.
R = Reorganize information.
D = Modify the directions.
F = Change text formatting (**bold**, etc.)
Note: Write **X** in the Rating Box if the item has no passage or stimulus.

Item Stem
S = Simplify / shorten stem.
C = Clarify question or directive.
Q = Change stem to a question.
A = Use active voice.
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Note: Write **X** in the Rating Box if the item does not have a stem.

Visuals
A = Add a visual.
E = Eliminate visual(s).
M = Move visual(s).
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M = More than one correct response.
Note: Write **X** in the Rating Box if the item is not a multiple-choice item.

Page/ Item Layout
E = Embed item in passage.
W = Increase white space.
S = Change size of item elements.
F = Change font size.
M = Move item / change item order.
R = Reduce spread of information across multiple pages/screens.

Overall
Other codes: 4

Example Item

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75

Constellations are groups of stars that have been named. The table shows some of the common constellations that a person in South Dakota may see at certain times of the year.

Time of Year	A Few Commonly Observed Constellations
January	Leo, Gemini, Big Dipper, Perseus
March	Pollux, Castor, Hercules
July	Bootes, Little Dipper, Lyra
November	Cassiopeia, Cancer, Orion

Why are different constellations seen at different times of the year?

A Earth's revolution around the sun affects which stars can be seen.

B The moon's revolution around Earth affects which stars can be seen on certain nights.

C Earth's tilt on its axis means that stars in some parts of the universe appear brighter than others.

D Stars revolve around the sun but follow a different path than Earth.

TAMI™ Accessibility Rating Matrix

Modification Guide — Item: G8 #75

	Pass	Stim
Passage / Item Stimulus	3	3
A = Add a passage or item stimulus.	A:__	A:__
E = Eliminate passage or item stimulus.	E:__	E:__
S = Simplify / shorten text.	S:X	S:X
R = Reorganize information.	R:__	R:__
D = Modify the directions.	D:__	D:__
F = Change text formatting (**bold**, etc.)	F:__	F:__
Note: Write **X** in the Rating Box if the item has no passage or stimulus.		

Item Stem	3
S = Simplify / shorten stem.	S:__
C = Clarify question or directive.	C:__
Q = Change stem to a question.	Q:__
A = Use active voice.	A:__
N = Eliminate negative stem.	N:__
F = Change text formatting (**bold**, etc.)	F:__
Note: Write **X** in the Rating Box if the item does not have a stem.	

Visuals	1
A = Add a visual.	A:__
E = Eliminate visual(s).	E:X
M = Move visual(s).	M:__
S = Simplify visual(s).	S:__
Note: Write **X** in the Rating Box if the item does not have a picture, chart, table, or figure.	

Answer Choices	3
S = Simplify / shorten text.	S:__
R = Revise answer choices.	R:__
E = Eliminate distractor(s).	E:X
O = Change the order of choices.	O:__
B = Balance issues.	B:__
M = More than one correct response.	M:__
Note: Write **X** in the Rating Box if the item is not a multiple-choice item.	

Page/ Item Layout	2
E = Embed item in passage.	E:__
W = Increase white space.	W:X
S = Change size of item elements.	S:__
F = Change font size.	F:__
M = Move item / change item order.	M:__
R = Reduce spread of information across multiple pages/screens.	R:__

Overall	
Other codes:	2

Example Item

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26

The law of conservation of energy states that the amount of energy in a system remains the same. The statement represents a scientific law since it —

A cannot be proven experimentally

B explains how energy is made

C describes a universal behavior of energy in nature

D proposes a universal solution to a scientific problem

TAMI™ Accessibility Rating Matrix

	Modification Guide	Item: G8 #26
Passage / Item Stimulus	A = Add a passage or item stimulus. E = Eliminate passage or item stimulus. S = Simplify / shorten text. R = Reorganize information. D = Modify the directions. F = Change text formatting (**bold**, etc.) **Note:** Write **X** in the Rating Box if the item has no passage or stimulus.	Pass: X A:__ E:__ S:__ R:__ D:__ F:__ Stim: 3 A:__ E:__ S: X R:__ D:__ F:__
Item Stem	S = Simplify / shorten stem. C = Clarify question or directive. Q = Change stem to a question. A = Use active voice. N = Eliminate negative stem. F = Change text formatting (**bold**, etc.) **Note:** Write **X** in the Rating Box if the item does not have a stem.	S:__ C:__ Q: X A:__ N:__ F: X 1
Visuals	A = Add a visual. E = Eliminate visual(s). M = Move visual(s). S = Simplify visual(s). **Note:** Write **X** in the Rating Box if the item does not have a picture, chart, table, or figure.	A:__ E:__ M:__ S:__ X
Answer Choices	S = Simplify / shorten text. R = Revise answer choices. E = Eliminate distractor(s). O = Change the order of choices. B = Balance issues. M = More than one correct response. **Note:** Write **X** in the Rating Box if the item is not a multiple-choice item.	S: X R: X E: X O:__ B:__ M:__ 2
Page/ Item Layout	E = Embed item in passage. W = Increase white space. S = Change size of item elements. F = Change font size. M = Move item / change item order. R = Reduce spread of information across multiple pages/screens.	E:__ W:__ S:__ F:__ M:__ R:__ 3
Overall	**Other codes:**	2

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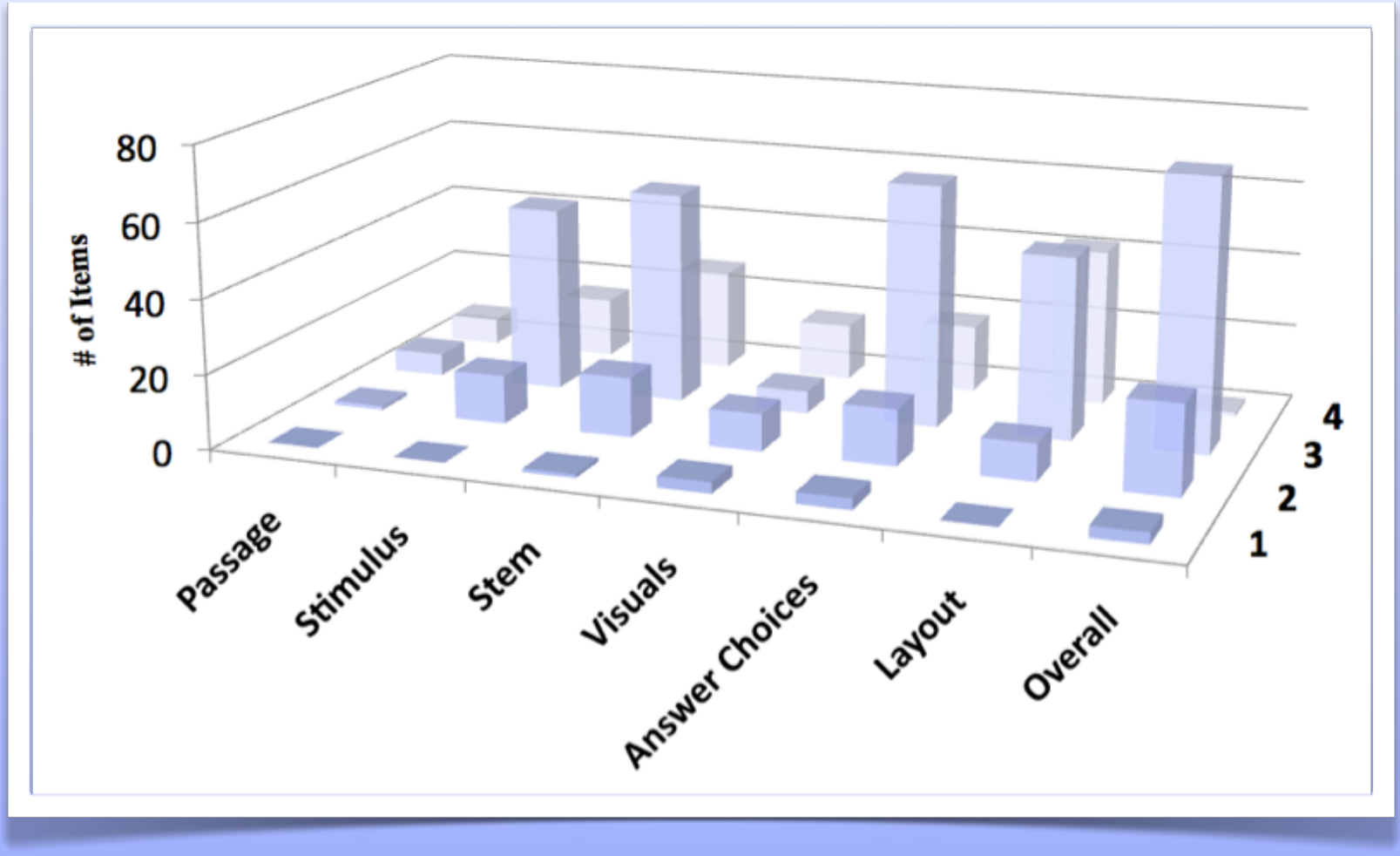
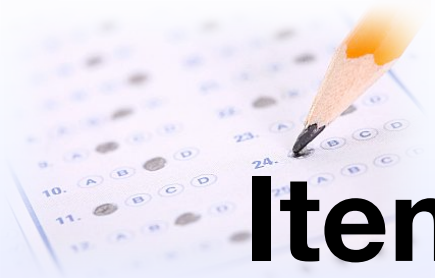
Item Accessibility Review: Results





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Item Accessibility Review: Results

		Item Element Ratings						
Grade	# of Items / % of Total	Passage *M (SD)*	Item Stimulus *M (SD)*	Item Stem *M (SD)*	Visuals *M (SD)*	Answer Choices *M (SD)*	Page & Item Layout *M (SD)*	Overall Rating *M (SD)*
All	**33 (33%)**	**3.4 (0.6)**	**3.0 (0.6)**	**3.1 (0.7)**	**3.0 (1.1)**	**3.0 (0.7)**	**3.3 (0.6)**	**2.7 (0.5)**
5	33 (33%)	4.0 (0.0)	2.9 (0.6)	2.9 (0.7)	2.8 (1.1)	3.0 (0.7)	3.4 (0.7)	2.6 (0.6)
8	34 (34%)	2.5 (0.7)	3.1 (0.7)	3.1 (0.7)	3.0 (1.1)	2.8 (0.7)	3.2 (0.7)	2.6 (0.6)
11	34 (34%)	3.5 (0.5)	3.1 (0.5)	3.2 (0.6)	3.3 (1.1)	3.1 (0.6)	3.3 (0.6)	2.9 (0.4)

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Positive Attributes

- **The evaluation team identified several positive attributes across the item sample, specifically noting:**
  - The use of plain wording of item stems and answer choices;
  - The inclusion of most information necessary for responding on a single page.

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Recommendations

- **The evaluation team made several recommendations to improve the accessibility of the items, including:**
  - Simplify item layouts
  - Distinguish item stimuli from item stems;
  - Simplify language in stimuli;
  - Eliminate unnecessary visuals; and
  - Attend to the possibility of multiple item keys.
- Additionally, the team suggested using three answer choices when possible to reduce reading load and cognitive demand.

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Conclusion

- **Items can be improved to reduce access barriers for students with a broad range of abilities and needs.**
  - Increased access = Better measurement;
  - Better measurement = Better data;
  - Better data = More reliable and valid information about student abilities and needs.
  - The more we know about the abilities and needs of the students we serve, the greater our confidence in the many decisions we make on their behalf.

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http://peaody.vanderbilt.edu/tami.xml

Thank you

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